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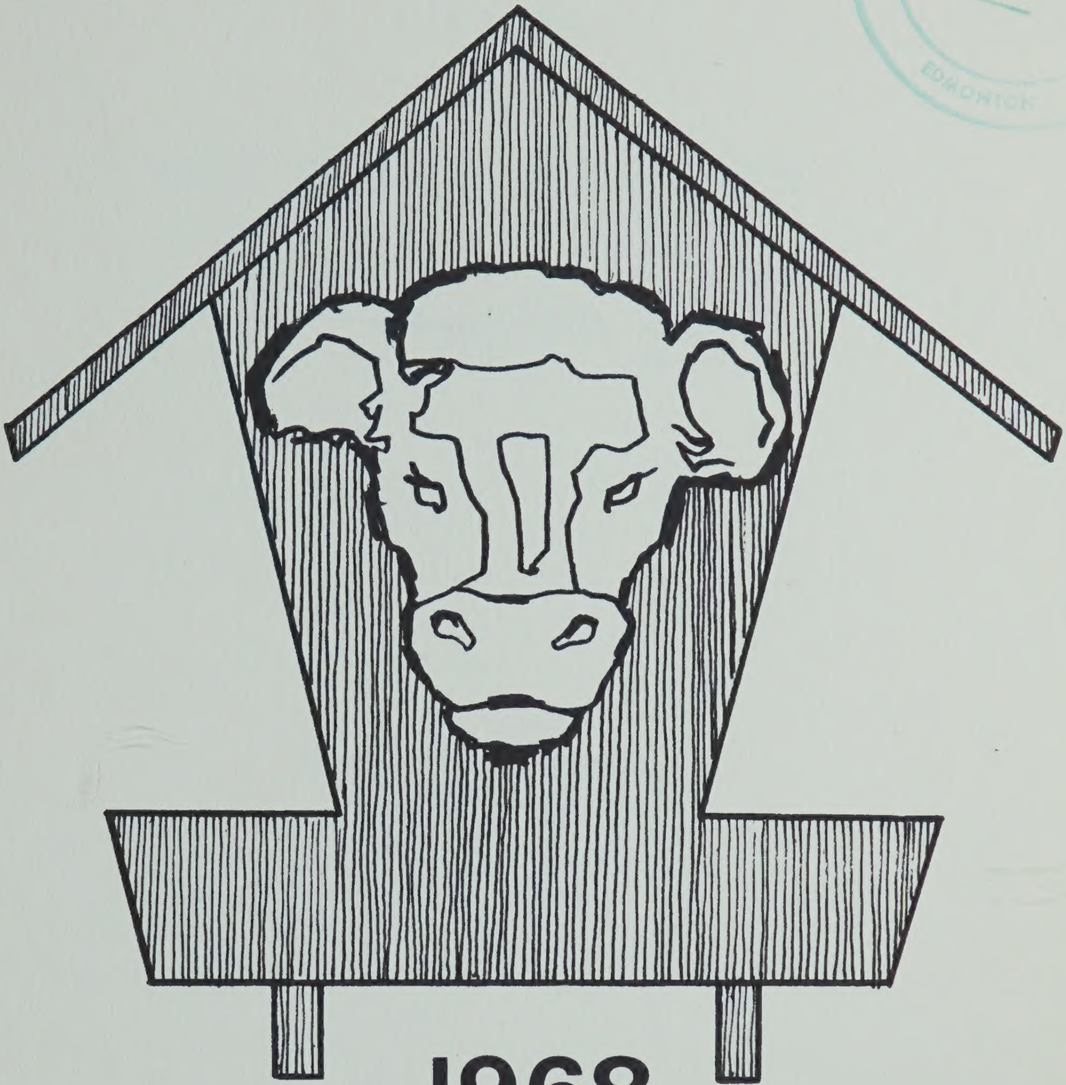

1968
BEEF FEEDER ENTERPRISE ANALYSIS

ALBERTA DEPARTMENT OF AGRICULTURE

Production Economics Branch.

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1968

ALBERTA

BEEF FEEDER ENTERPRISE

ANALYSIS

by

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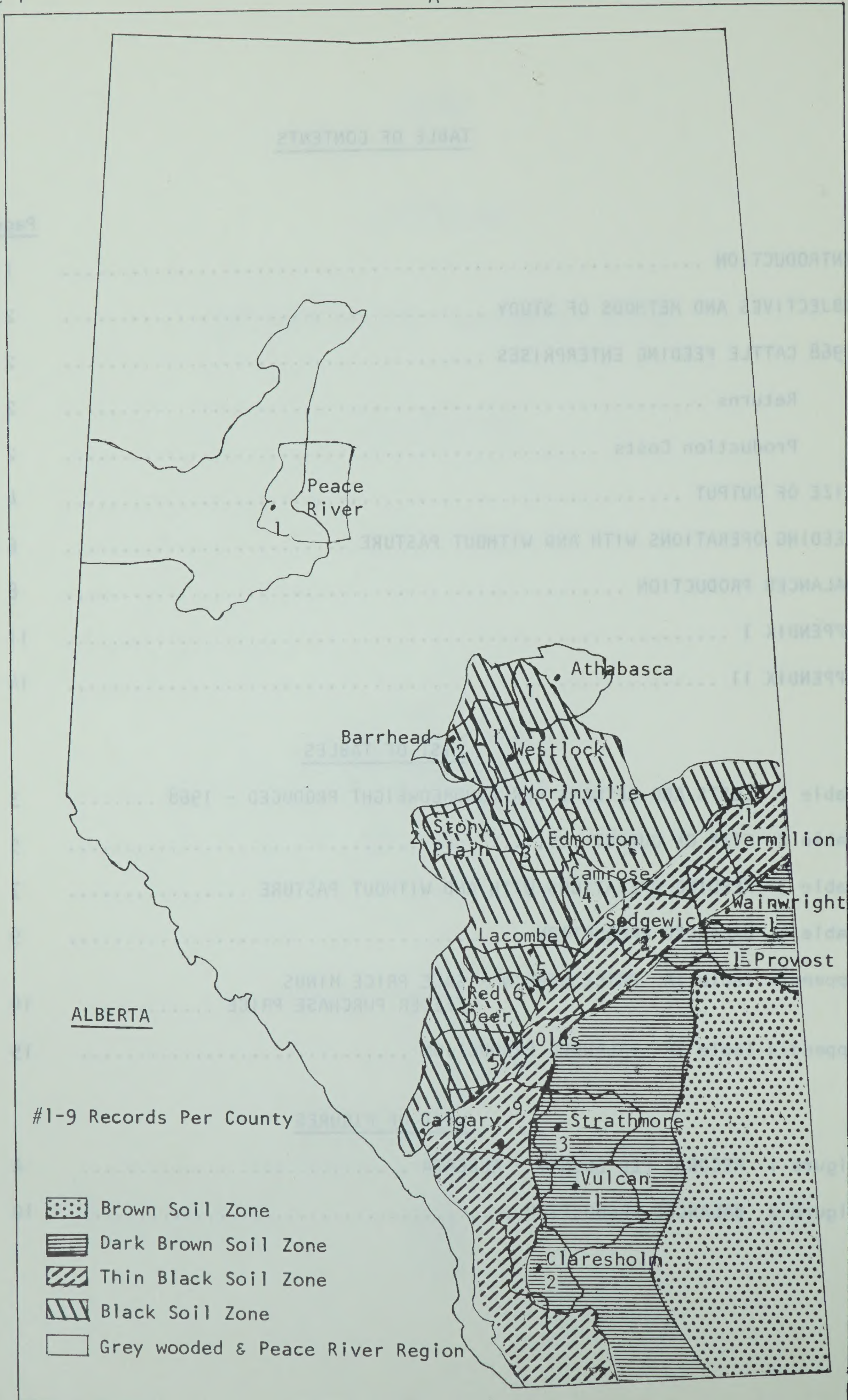
Peace River
1
Athabasca
1
Barrhead
2
1
Westlock
Morinville
1
Stony Plain
2
Edmonton
3
1
Vermilion
Camrose
4
Wainwright
Sedgewick
2
1
Lacombe
1
Provost
5
Red Deer
6
Olds
5
9
Calgary
Strathmore
3
Vulcan
1
Claresholm
2
ALBERTA
#1-9 Records Per County
Brown Soil Zone
Dark Brown Soil Zone
Thin Black Soil Zone
Black Soil Zone
Grey wooded & Peace River Region

INTRODUCTION

This analysis report is compiled and presented in order to familiarize the Alberta farmer and agriculture oriented business man with the costs and returns encountered in the beef feeder operations included in the 1968 Alberta Farm Management Study. This publication by virtue of its content will enable interested individuals to make comparisons of their operation with those presented, anticipate costs and returns which would be encountered if they were to undertake a similar enterprise and to evaluate their own managerial position relative to the group included in the beef feeder study.

In using this data it should be kept in mind that the group included in the study is apparently not representative of all beef feeder operations in the province. An evaluation made by this Branch in 1967 suggested that relative to size and income the upper third of farms, with the exception of the very large operations, were being accurately represented.

OBJECTIVES AND METHODS OF STUDY

The objective of the Cattle Feeding Enterprise Analysis is to study the cost-return relationships of feeder operations on farms in Alberta, excluding cooperative and commercial feedlots.

The data used in this analysis were from farms voluntarily enrolled in the 1968 Alberta Farm Business Management Program. The cattle feeding records comprised of 50 farms primarily located in the black and thin black soil zones, although the brown and grey wooded areas were also represented (see Figure 1).

This study is divided into three parts:

(a) The determination of average production costs and returns.

(b) The comparative analysis of costs and returns between feeding operations with and without pasture.

(c) The comparison of the various sizes of feeder operations.

1968 CATTLE FEEDING ENTERPRISES

The production of the fifty cattle feeding operations included in the 1968 Beef Feeder Analysis ranged from 200 to 2,200 cwt.

Returns

Gross returns from the feeder operations varied from $3,000 with a 200 cwt. producing enterprise to $55,100 for a 2,200 cwt. producing operation. The average gross return was $15,700 on the removal of the appropriate expenses, $1,030 of this was left as a return for the labor, management and risk involved in the enterprise.

Production Costs

The largest single component of total production costs was feed cost ; it amounted to 70% of the total costs. The average cost of feed per hundred pounds

Table 1 COSTS AND RETURNS PER HUNDREDWEIGHT PRODUCED - 1968

	1968	Average 1965 - 67
Number of Farms	50	60
Average Production (cwt.)	669	799
Costs		
Grain	$12.35	$11.62
Millfeed	1.88	2.39
Roughage	2.44	2.77
Straw	0.37	0.49
Pasture	0.35	0.44
Total Feed Cost	$17.39	$17.71
Vet. and Medicine	0.32	0.29
Other Variable	2.15	1.61
Total Variable Cost (A)	$19.86	$19.61
Depreciation and Insurance	$ 1.20	$ 1.17
Interest on Buildings & Equipment Investment*	0.52	0.52
Interest on Livestock Investment	1.71	1.55
Total Fixed Costs (B)	$ 3.43	$ 3.24
Labor Costs (C)	$ 1.40	$ 1.23
Labor Hours	1.16 hrs.	N. A. hrs.
Total Production Costs (D)	$24.69	$24.08
Returns		
Gross Return (exclusive of purchase price) (E)	$24.83	$26.95
Return to Labor, Management and Risk [E-(A+B)]	1.54	4.10
Return to Management and Risk (E-D)	0.14**	2.87
% Return to Investment	10.52%	14.31%
Investment		
Building Investment	$ 3.35	N. A.
Equipment Investment	$ 5.32	N. A.

* - Interest was charged at 6%.

** - Referring to Appendix Table 1A, it appears that the small positive return in the 1968 Cattle Feeding Enterprise Analysis was partially the result of a negative margin throughout most of the year.

N. A. - Not Available

of gain was $17.39 (Table 1). Sixty per cent of all farms had feed costs within $2.00 of this value, suggesting that the $17.39 value is acceptable as a representative figure. The combination of roughage and grain fed was valued at between $1.00 and $2.00 per cwt. These rations, relative to the costs, were composed of a 1:4 roughage to grain combination, that is, for every dollar of roughage fed, four dollars worth of grain were also fed. The conversion of the ration of beef was in a 10:1 proportion, i. e. 10 pounds of feed were fed per pound of gain.

The average equipment operating cost for the fifty farms was $0.81 per cwt. When this cost was combined with trucking, feed processing and manure handling costs, the figure increased to $2.15 per cwt. Veterinary and medicine expenses averaged $0.32 per cwt., ranging from the lowest of $0.10 to the highest of $6.00 per cwt.

The average total variable cost per cwt. for all farms was $19.86, with sixty-seven per cent of all operations concentrated within a $6.00 range of this figure.

The fixed costs were found to be relatively constant varying around the average of $3.43/cwt.

The average labor cost was $1.40 per cwt. produced. This value, however, was lower for 15 of the 50 farms studied.

The building and equipment investment per cwt. produced was $3.35 and $5.32 respectively. These values appear to be representative of the group of farms under study.

SIZE OF OUTPUT

The average return to management and risk was negative for farms producing under 1,000 cwt. in 1968. The per cent of farms having negative returns to risk and management were 58%, 69% and 40% for enterprises producing 200 - 499, 500 - 999

Table 2 SIZE OF OUTPUT

	200 - 499	500 - 999	1000+
Number of Farms	24	16	10
Production cwt./Operation	315	752	1471
Gross Return/cwt. (exclusive of purchase price)	$24.12	$23.61	$24.53
COSTS			
Feed Costs			
Grain & Millfeed & Complete Feeds	$13.48	$15.80	$14.28
Roughage & Pasture	3.28	4.40	3.56
Feed Total	$16.76	$20.20	$17.84
Operating Cost			
Equipment	$ 1.03	$ 0.73	$ 0.42
Building and Fence Maintenance	0.61	0.45	0.30
Vet., Medicine and Other Direct	0.97	1.75	0.84
Power and Telephone	0.28	0.22	0.17
Total Variable Cost	$19.65	$23.35	$19.57
Total Fixed Cost	$ 5.02	$ 5.04	$ 2.85
Total Production Cost **	$26.77	$29.92	$23.54
Labor			
Labor Cost	$ 2.10	$ 1.53	$ 1.12
Labor Hours	1.52 hrs.	1.06 hrs.	0.75 hrs.
RETURNS *			
Return to Management and Risk	$-2.65	$-6.31	$ 0.99
Return to Labor, Management & Risk	-0.55	-4.78	2.11
% Return to Investment	2.90%	-11.70%	14.20%
INVESTMENT			
Building	$ 6.95	$ 6.65	$ 3.57
Equipment	$ 9.22	$ 7.91	$ 3.72

* - Costs and returns are per cwt. produced.

** - Labor costs are included.

and 1,000+ cwt. respectively (see Table 2).

On evaluating the feed costs, little difference was noted between the various size groups. Similarly, the total variable costs did not appear to be different among the three groups. The equipment operating costs, however, were lower for the larger operations. This appears to be in agreement with the equipment operating costs noted later in the pasture versus non-pasture comparison in which the larger pasture orientated operations incurred lower equipment operating costs than the smaller non-pasture operations.

The fixed costs did display signs of variable proportions[1/] as they were lower for the larger operations (see Table 2 under the heading 'Investment'). Labor costs for the larger operations, 1,000 cwt. plus, were \$1.12 per cwt. to \$2.10 per cwt. for the 200-499 cwt. producing units. This would suggest more efficient labor utilization with the larger operation possibly due to fuller employment of labor in these operations.

A further factor worthy of note is that the larger operations apart from producing more beef, both per animal and per enterprise, also fed their animals to heavier weight. As it costs more to maintain an animal at a heavier weight, some increase in the feed cost would be anticipated in the larger operations. The table on size of output suggests this may be true but the data was not conclusive on this point.

FEEDING OPERATIONS WITH AND WITHOUT PASTURE

Table 3 displays the comparison of two feeding practices, those utilizing pasture and complete drylot operations. The farms using pasture employed an average of one-quarter of an acre per hundred weight of beef produced.

It was noted that the pasture orientated operations had lower variable costs than the complete drylot enterprises. This appears to be primarily the result of lower feed and equipment operating costs.

[1/] The proportion of overhead (fixed costs) required per animal is less in larger operations than in smaller ones.

Table 3 FEEDING OPERATIONS WITH AND WITHOUT PASTURE

	PASTURE	NO PASTURE
Number of Farms	26	24
Production cwt./operation	1,107	506
Gross Return/cwt. (exclusive of purchase price)	$24.04	$24.54
COSTS		
Feed Costs		
Grain & Millfeed & Complete Feeds	$13.08	$15.79
Roughage & Pasture If Any	3.66	3.73
Feed Total	$16.74	$19.52
Operating Cost		
Equipment	$ 0.58	$ 1.03
Building and Fence Maintenance	0.35	0.65
Vet., Medicine and Other Direct	1.03	1.37
Power and Telephone	0.20	0.27
Total Variable Cost	$18.90	$22.84
Total Fixed Cost	$ 3.63	$ 5.64
Total Production Cost **	$23.92	$30.55
Labor		
Labor Cost	$ 1.39	$ 2.07
Labor Hours	0.98 hrs.	1.48 hrs.
RETURNS *		
Return to Management and Risk	$ 0.12	$-6.01
Return to Labor, Management & Risk	1.51	-3.94
% Return to Investment	13.60%	-9.40%
INVESTMENT		
Building	$ 4.03	$ 8.50
Equipment	$ 5.32	$10.27

* - Costs and returns are per cwt. produced.

** - Labor costs are included.

The feedlot enterprises using pasture also displayed lower fixed costs. This was found to be associated with a lower building and equipment investment per cwt. of beef produced of the pasture oriented operations. The difference in these values is best appreciated when one considers that the fixed costs also include 6% interest on the investment in cattle. This interest would be higher for the larger pasture operations than for the non-pasture operations. The actual building and equipment investments are listed in this same table under investment. Both labor costs and hours of labor were found to be lower with the pasture operations. The writer suggests this lower labor employment was partially the result of feed handling in the drylot (non-pasture) operations.

BALANCED PRODUCTION

Five factors have been found to notably affect the profit position of feeder operations. They were: feed cost, feed conversion, labor use, capital use and gross return (see Table 4). The achievement of average or better performance in each of the factors was important but apparently more important was a balance of achievement of all factors. This would be anticipated, as the Cattle Feeding Operation is a composite of production factors such as those included in this balanced production study.

The five management factors and their averages were:

Feed Cost	$ 1.74 per cwt. of ration
Feed Conversion	9.86 cwt.feed per cwt. beef produced.
Labor Use	1.16 hours per cwt. produced.
Capital Use	$ 6.23 gross return per $1.00 fixed cost.
Gross Return	$24.83 gross return per cwt. produced.
Return to Management & Risk	$ 0.14 per cwt. produced.

Table 4

BALANCED PRODUCTION[1]

No. of Factors Above Average	No. of Records	Hundred Weight Produced	Variable Cost	Fixed[2] Cost	Total[3] Cost	Hours Labor	Return to Risk & Management	Return To Risk & Mgmt. per Enterprise
0 - 1	10	319	$22.44	$5.67	$30.50	1.76	$-5.88	$-1,502
2	17	580	20.47	5.11	26.16	1.09	-3.10	-2,858
3	13	646	16.97	3.88	22.53	1.08	+1.24	+ 897
4	10	1,902	18.65	2.59	22.27	0.71	+1.56	+5,447

These findings would suggest that achieving one factor, such as above average labor efficiency, would not in itself make an operation profitable. More important is a balance of all factors and achieving efficient utilization of each one.

The return to risk and management was found to display an overall increase as an operator achieved above average efficiency in the use of several of his production factors, (Figure 2). In order to establish the degree to which these input factors are related to the return to management and risk, a statistical (regression) analysis was conducted on the data (see Appendix Table 2A).

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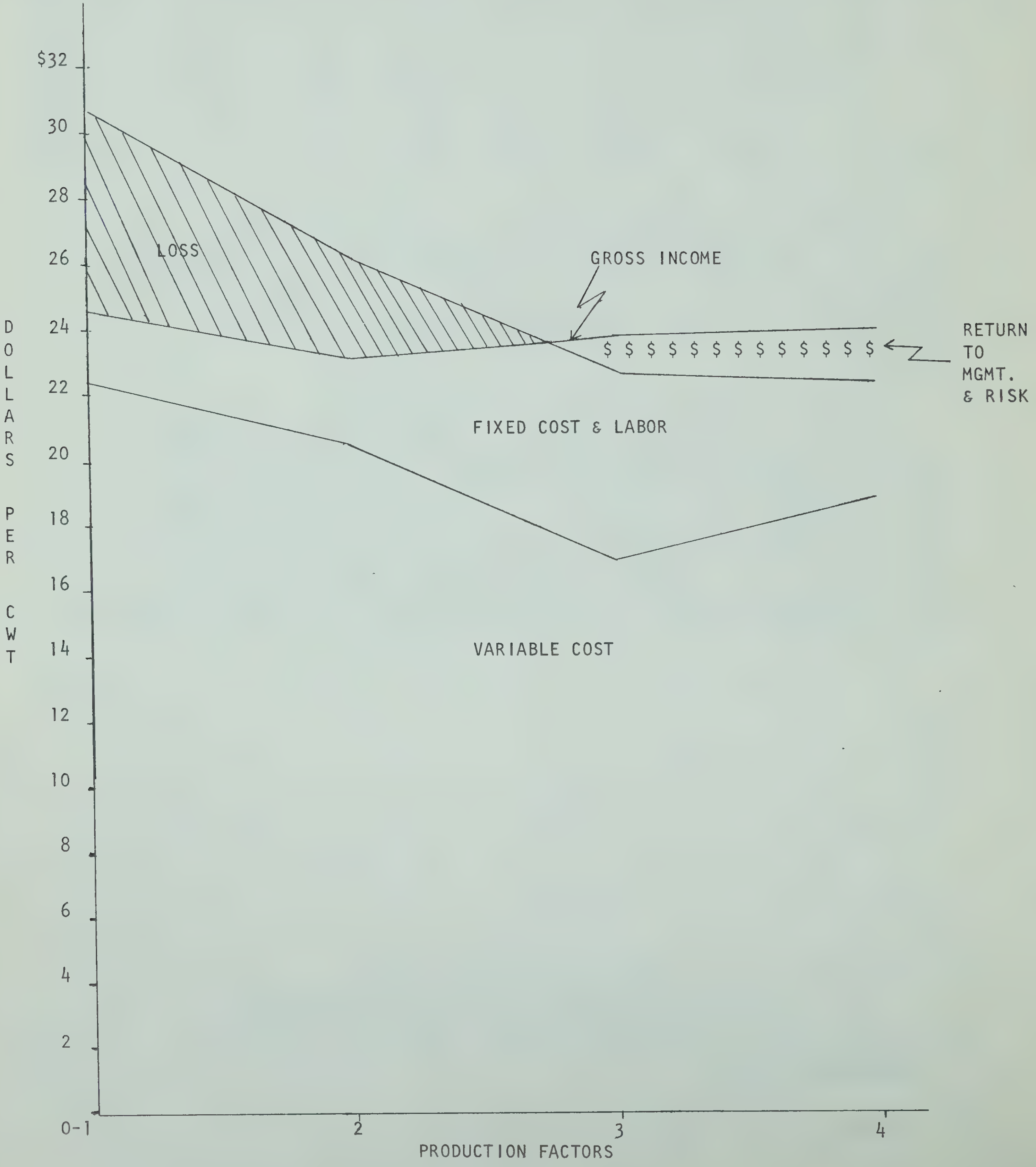
[1] All values are per cwt. produced unless specified otherwise.

[2] Includes interest and depreciation on buildings and equipment and interest on cattle.

[3] Includes variable, fixed and labor costs.

Figure 2

BALANCED PRODUCTION



APPENDIX 1

Definitions

Depreciation - is the loss in value of a fixed asset due to wear, tear and obsolescence during the period of one year.

Fixed Cost - are those costs which, in view of their fixed commitments, are frozen and will be incurred; examples would be depreciation on buildings and equipment. They are costs that will not vary with the level of production or will not be affected by the decision under consideration.

Gross Return - is the value of production added to the beef feeder operation. i. e. value of gain in weight plus the value or the price margin.

Millfeed - includes such items as salt, vitamins, minerals, supplements, starter rations.

Variable Cost- is the sum of all costs which vary in total with output and will be affected by the decision under consideration; examples are costs of feed, medicine, veterinary, equipment operating, building maintenance and marketing costs.

Factors included under cost headings:

NOTE: All costs are charged according to usage by the beef feeder enterprise.

Fixed Cost - depreciation on all buildings, corrals, handling equipment and other machinery.

- Interest - interest at 6% was charged on the capital invested in the enterprise.
- Insurance - was charged on the investment in the beef feeder enterprise.

Labor Costs	- valued at $300/month for the operator, hired help at cost and family labor at the operator's assessed value.
Return to Labor, Management and Risk	- the gross return minus variable and fixed costs.
Return to Management and Risk	- the gross return minus variable, fixed and labor costs. This value might be viewed as the net profit after all expenses, cash, overhead and labor have been removed. A zero or negative value here would not necessarily suggest that you did not make a reasonable return but could instead be interpreted that you did not make $300/month for your labor or you did not make a 6% return on your investment.
Total Production Costs	- include all variable, fixed and labor costs.
Variable Cost - feed cost	- Grain, roughage and pasture, equipment operating costs, trucking, feed processing, manure handling, building and fence maintenance, commission charges, veterinary and medical expenses.
Return to Investment	- is the net return to the capital invested in the enterprise. All variable costs, depreciation, insurance and an imputed operator labor cost has been removed from the gross return in establishing this value.

Assumed Values

(a) Home grown feed was valued at the estimated market price, i. e. the value the farmer would have received if he had sold it off his farm.

(b) Building costs were allocated on the proportion of the building used by the feeder operation. Interest on the building was charged at 6%; maintenance at actual cost and depreciation at 5%.

(c) Equipment costs including depreciation, interest, maintenance, fuel oil, etc., were charged to the beef feeder operation according to the proportion used by the enterprise. Interest on the equipment investment was charged at 6%.

APPENDIX II

Table 1A

PRICE MARGIN - SALE PRICE MINUS FEEDER PURCHASE PRICE

	Sale Month or Inventory (Dec.)											
MONTH OF PURCHASE	J	F	M	A	M	J	J	A	S	O	N	D
Jan.	-0.57	-1.42	-1.81	-1.08	-0.08	+1.14	+1.16	+1.62	+1.22	+0.55	+0.21	+0.29
Feb.		-2.37	-2.76	-2.03	-1.03	+0.19	+0.41	+0.67	+0.27	-0.40	-0.74	-0.66
Mar.			-3.23	-2.50	-1.50	-0.28	-0.06	+0.20	-0.20	-0.87	-1.21	-1.13
Apr.				-3.14	-2.14	-0.92	-0.70	-0.44	-0.84	-1.51	-1.85	-1.77
May					-2.50	-1.28	-1.06	-0.80	-1.20	-1.87	-2.21	-2.13
June						-1.28	-1.06	-0.80	-1.20	-1.87	-2.21	-2.13
July							-1.06	-0.80	-1.20	-1.87	-2.21	-2.13
Aug.								-0.80	-1.20	-1.87	-2.21	-2.13
Sept.									-0.92	-1.59	-1.93	-1.85
Oct.										+0.02	-0.32	-0.24
Nov.											-0.97	-0.89
Dec.												-1.26

Table 1A displays the average buying to selling margins encountered by cattle feeders in 1968. Interpretation of the table includes noting the month in which the cattle were purchased, vertical column left side, or if they were on hand in January, the January price would approximate the opening inventory value. The row in which this month is included is then read across to the column month in which the cattle were sold or the ending inventory month, December. The price at which the purchase month row intercepts the sale month column is the approximate margin encountered by the farm operator, in the buying and selling transaction.

EXAMPLE: Purchasing cattle in February, 1968, and selling them in September, 1968, would realize a margin of $+0.27.

Table 2A

BALANCED PRODUCTION

Independent Variables

X_1 = Capital Use

X_2 = Labor Hours

X_3 = Feed Conversion

X_4 = Gross Return (Exclusive of Purchase Price)

X_5 = Feed Cost

Dependent Variable

X_6 = Return to Management and Risk

REGRESSION FORMULA	T	R^2
$X_6 = 5.90 + 0.57 X_1$	2.96	37.93
$-5.01 X_2$	-9.39	16.18
$-1.20 X_3$	-9.93	19.42
$+ .81 X_4$	5.50	6.33
$-7.29 X_5$	-4.49	6.54
		86.40

CORRELATION COEFFICIENTS - "r"

	X_1	X_2	X_3	X_4	X_5	X_6
X_1		.28	-.25	.27	.18	.61
X_2			-.06	-.06	-.17	-.56
X_3				.39	-.46	-.51
X_4					.03	.15
X5						.21

The formula by which returns could be anticipated is as follows:

Return to Management and Risk = 5.90 + (0.57 x Capital Use)
- (5.01 x labor hours)
- (1.20 x feed conversion)
+ (0.81 x gross return)
- (7.29 x feed cost)